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Application No. 10/517,987
Amdt. dated Feb-25-2008
Reply to Office Action of Oct-13-07

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Amendments to the Claims:

1. to 18. (Cancelled)

19. (Currently amended) A process of preparing a canola protein isolate of improved colour solution from canola oil seed meal, which comprises:

(a) washing said canola oil seed meal with an alcohol, wherein said washing step is effected by dispersing the canola oil seed meal in the alcohol at a w/v ratio of about 1:3 to about 1:10, stirring the resulting slurry for about 5 to about 60 minutes at a temperature of about 15° to about 45°C, and separating the washed canola oil seed meal from the slurry.

(b) extracting the washed canola oil seed meal to cause solubilization of the protein in the washed canola oil seed meal to form an aqueous protein solution having a pH of about 5 to about 6.8,

(c) separating the aqueous protein solution from residual oil seed meal,

(d) increasing the protein concentration of said aqueous protein solution while maintaining the ionic strength ~~straight~~ substantially constant by use of a selective membrane technique to provide a concentrated protein solution,

(e) diluting said concentrated protein solution into chilled water having a temperature of below about 15°C to cause the formation of discrete protein micelles in the aqueous phase,

(f) settling the protein micelles to form an amorphous, sticky, gelatinous, gluten-like protein micellar mass, and

(g) recovering the protein micellar mass from supernatant, the protein micellar mass having a protein content of at least about 90 wt% (N x 6.25) on a dry weight basis.

20. (Currently amended) The process of claim 19 ~~claim 16~~ wherein the alcohol is ethanol.

21. (Cancelled)

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22. (Currently amended) The process of claim 19 ~~claim 21~~ wherein said slurry is stirred for about 15 to about 30 minutes at a temperature of about 30 to about 75°C.

23. (Currently amended) The process of claim 19 wherein said washing is effected ~~effected~~ a multiple number of times until no additional phenolics and/or visible colour is recovered.

24. (Original) The process of claim 19 wherein said canola oil seed meal is canola oil seed meal which has been air desolventized at a temperature of below about 50°C to remove residual oil extraction solvent.

25. (Original) The process of claim 19 wherein said canola oil seed meal is canola oil seed meal which has been desolventized at an elevated temperature below about 100°C to remove residual oil extraction solvent.

26. (Currently amended) A process of preparing a canola protein isolate of improved colour from canola oil seed meal, which comprises:

(a) extracting the canola oil seed meal to cause solubilization of the protein in the canola oil seed meal to form an aqueous protein solution having a pH about 5 to about 6.8,

(b) separating the aqueous protein solution from residual oil seed meal,

(c) increasing the protein concentration of said aqueous protein solution while maintaining the ionic strength substantially constant by effecting ultrafiltration of the aqueous protein solution to provide a concentrated protein solution,

(d) subjecting the concentrated protein solution to diafiltration using about 2 to about 20 volumes of diafiltration solution, until no significant further quantities of phenolics and colour are present in the permeate,

(e) diluting the diafiltered protein solution into chilled water having a temperature below about 15°C to cause the formation of discrete protein micelles in the aqueous phase,

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(f) settling the protein micelles to form an amorphous, sticky, gelatinous, gluten-like protein micellar mass, and

(g) recovering the protein micellar mass from supernatant, the protein micellar mass having a protein content of at least about 90 wt% (N x 6.25) on a dry weight basis.

27. (Cancelled)

28. (Currently amended) The process of claim 26 ~~claim 28~~ wherein said diafiltration is effected using about 5 to about 10 volumes of diafiltration solution.

29. (Currently amended) The process of claim 26 ~~claim 27~~ wherein said extraction step is effected using an aqueous salt solution having a pH in the range of about 5 to about 6.8 and said diafiltration solution is an aqueous salt solution having the same concentration and pH as the solution used in said extraction step.

30. (Currently amended) The process of claim 26 ~~claim 27~~ wherein said diafiltration is effected using a membrane having a molecular weight cut-off in the range of about 3000 to about 50,000 daltons.

31. (Original) The process of claim 30 wherein said membrane has a molecular weight cut-off of about 5000 to about 10,000 daltons.

32. (Currently amended) The process of claim 26 ~~claim 27~~ wherein said diafiltration solution contains an antioxidant for at least a portion of said diafiltration step.

33. (Original) The process of claim 32 wherein said antioxidant is sodium sulfite or ascorbic acid.

34. (Original) The process of claim 33 wherein said antioxidant is used in an amount of about 0.01 to about 1 wt%.

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35. (Original) The process of claim 26 wherein said extraction step is effected using an aqueous salt solution having a pH of about 5 to about 6.8 and containing an antioxidant.

36. (Original) The process of claim 26 wherein said canola oil seed meal is washed with an alcohol.

37. (Original) The process of claim 26 wherein said protein micellar mass is dried and the dried canola protein isolate is extracted with an aqueous alcoholic solution.

38. (Original) The process of claim 36 wherein said supernatant is concentrated by effecting ultrafiltration of the supernatant to provide a concentrated supernatant and the concentrated supernatant is subjected to diafiltration.

39. (Original) The process of claim 38 wherein said diafiltration is effected using about 2 to about 20 volumes of diafiltration solution.

40. (Original) The process of claim 39 wherein said diafiltration is effected using about 5 to about 10 volumes of water.

41. (Original) The process of claim 39 wherein said diafiltration is effected using a membrane having a molecular weight cut-off in the range of about 3000 to about 50,000 daltons.

42. (Original) The process of claim 39 wherein said membrane has a molecular weight of about 5000 to about 10,000 daltons.

43. (Original) The process of claim 39 wherein said diafiltration solution contains an antioxidant for at least a portion of said diafiltration step.

44. (Original) The process of claim 43 wherein said antioxidant is sodium sulfite or ascorbic acid.

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45. (Original) The process of claim 44 wherein said antioxidant is used in an amount of about 0.01 to about 1 wt%.

46. (Original) The process of claim 26 wherein said diafiltered protein solution is contacted with a colour-adsorbing agent prior to said diluting step.

47. (Original) The process of claim 46 wherein said colour-adsorbing agent is polyvinylpyrrolidone.

48. (Original) The process of claim 47 wherein said polyvinylpyrrolidone is used in an amount of about 0.5 to about 6 wt%.

49. (Original) The process of claim 48 wherein said polyvinylpyrrolidone is used in an amount of about 2 to about 3 wt%.

50. (Original) The process of claim 26 wherein the canola oil seed meal is prepared by inactivating myrosinases in canola oil seeds and recovering canola oil from the treated oil seeds to form the canola oil seed meal.

51. (Original) The process of claim 40 wherein the canola oil seed meal is air-desolventized at a temperature below about 50°C to remove residual oil extraction solvent.

52. (Original) The process of claim 50 wherein the canola oil seed meal is desolventized at an elevated temperature below about 100°C to remove residual oil extraction solvent.

53. (Original) The process of claim 26 wherein said diafiltered protein solution is subjected to a pasteurization step prior to said diluting step.

54. (Original) The process of claim 53 wherein said pasteurization step is effected by heating the diafiltered protein solution at a temperature of about 55° to about 70°C for about 10 to about 15 minutes.

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55. to 64. (Cancelled)